



USAID
FROM THE AMERICAN PEOPLE

Sustainable Mekong Energy Initiative

LMI Renewable and Clean Energy
Business Dialogue 2015

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USAID Sustainable Mekong Program

- The Lower Mekong Initiative (LMI), launched in 2009, is a multinational partnership to create sub-regional cooperation among the five Lower Mekong countries.
- USAID is working with LMI Partners to develop a regional approach to environment management and strengthen capacity to manage shared water resources.
- To support a shift toward sustainable green growth, USAID supports three main programs:
 - Smart Infrastructure for the Environment (SIM)
 - Mekong Partnership for Environment (MPE)
 - SERVIR Mekong

Expansion of Sustainable Mekong to Power Sector

In February 2015, U.S. Secretary of State announced the Sustainable Mekong Energy Initiative (SMEI):

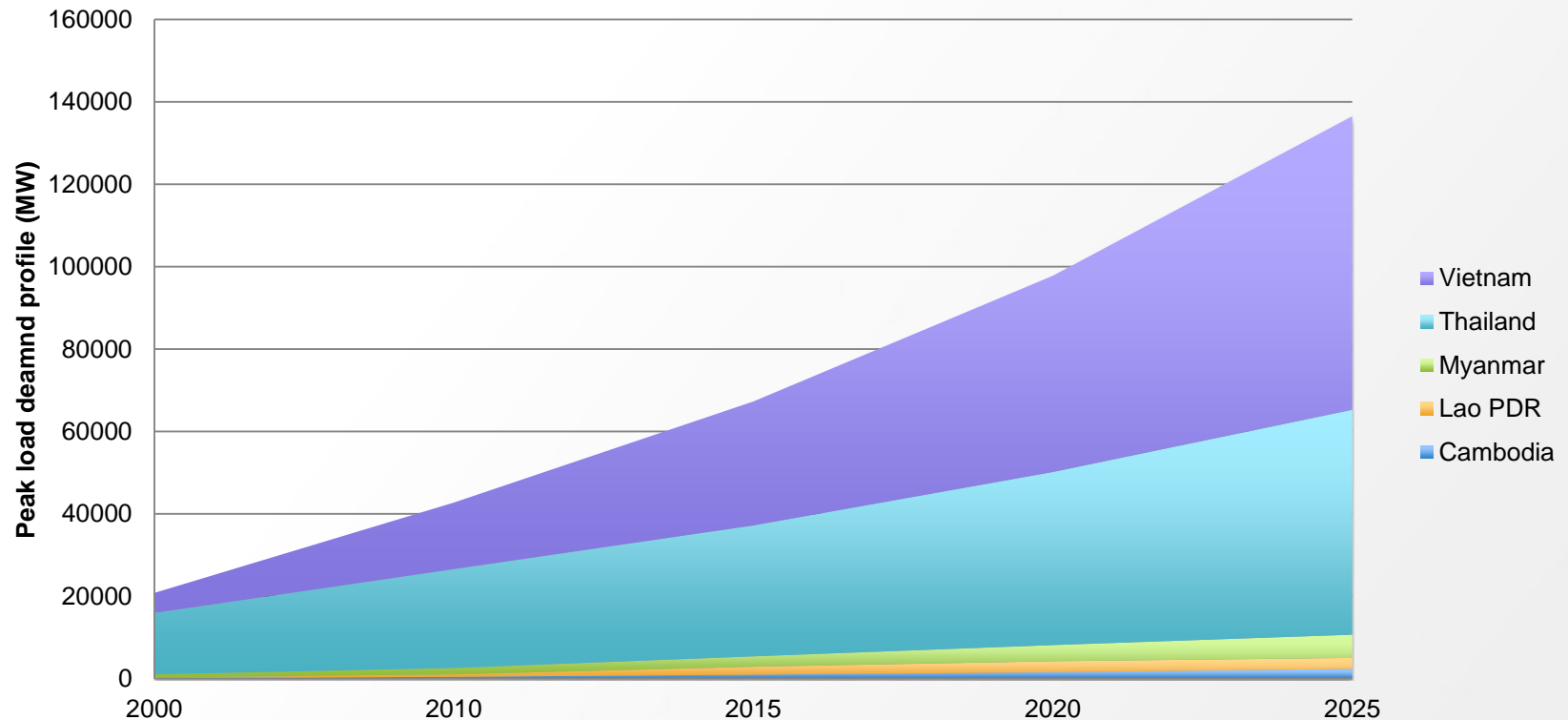
“a plan to encourage the countries of the region to develop programs that will redirect their investments to innovations in renewable energy and other sources that do not harm the environment”



Concept of Sustainable Mekong Energy Initiative

- Economic growth is the driving need for continuing dramatic increases in demand for electric power, most of which is based on conventional sources: fossil fuels and large hydropower.
- Current power plans have large negative impacts on global greenhouse gas emissions, as well as human health, fisheries, and livelihoods.
- There are existing climate-friendly and environmentally and socially sound alternative power sources that can be rapidly deployed.

Challenge or opportunity?

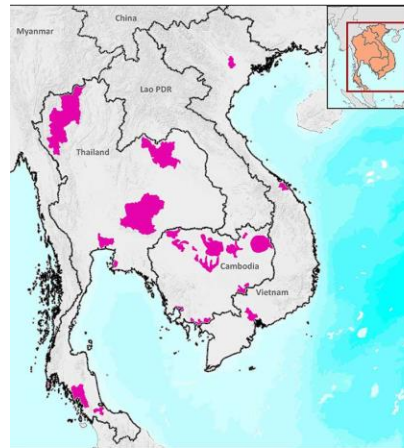


Source:

ADB. 2002. *Indicative Master Plan on Power Interconnections in GMS countries*, Manila

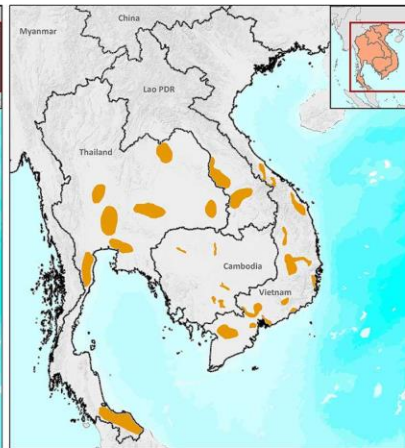
ADB. 2010. *Update of the GMS Regional Master Plan*, Manila

Resources are plentiful



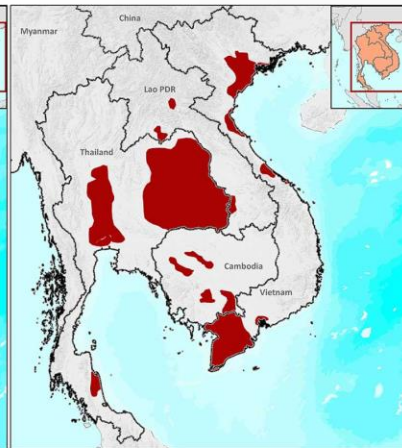
RENEWABLE ENERGY: SOLAR HOUSEHOLD ROOFTOP

Country Boundary Solar Household Rooftop



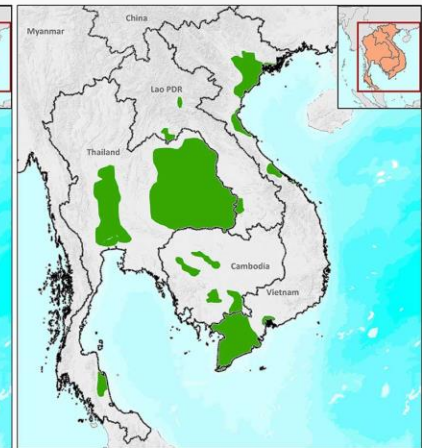
RENEWABLE ENERGY: SOLAR FARM

Country Boundary Solar Farm



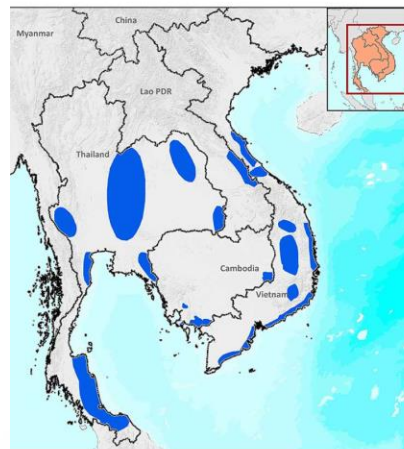
RENEWABLE ENERGY: BIOGAS

Country Boundary Biogas



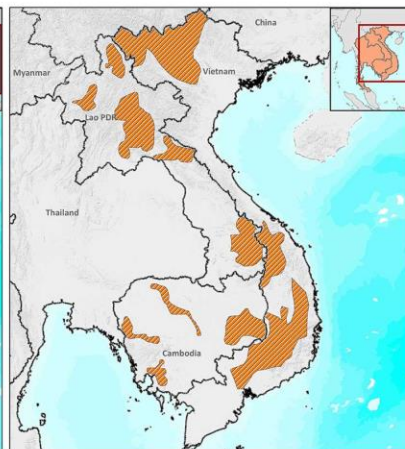
RENEWABLE ENERGY: BIOMASS

Country Boundary Biomass



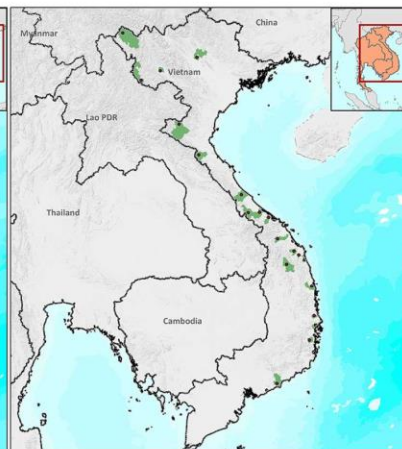
RENEWABLE ENERGY: WIND

Country Boundary Wind



SMALL HYDRO POWER PLANTS

Country Boundary Small hydro power plant



RENEWABLE ENERGY: GEOTHERMAL IN VIETNAM

Country Boundary Geothermal

Locating renewable electricity generation in the Mekong

The maps show areas estimated to be suitable for the location of renewable electricity generation technologies

SOLAR PV located in areas of high solar radiation and took account for the availability of waste-land with low slope. By 2025, solar PV installations in appropriate areas indicated on the map could include an estimated: 800 solar farms of total installed capacity 16,000MW and 464,300 rooftop solar installations of 929MW.

WIND located in areas with high wind potential on areas of wasteland with low slope. By 2025, it is estimated that 292 wind farms could be installed in the areas indicated on the map with a total capacity 8,760MW.

BIOMASS AND BIOGAS located in areas of intensive crop cultivation, such as rice paddies, and intensive livestock farming areas, such as pig farms. Also solid municipal waste locations on the outskirts of the largest urban settlements were deemed appropriate for electricity generation from biomass and biogas. By 2025, installations in the areas indicated on the map could include an estimated: 551 biomass waste combustion plants of total installed capacity 5,510MW, 182 biogas wastewater plants of total capacity 409MW, and 296 landfill gas plants of total capacity 710MW.

SMALL HYDROPOWER located in upland areas with adequate rainfall and slope, based upon current locations of small hydropower. By 2025, it is estimated that 912 small hydro plants of 10MW in size could be installed in the areas indicated on the map with a total capacity of 9,120MW.

GEOTHERMAL located based upon available assessments of geothermal potential in Vietnam. By 2025, it is estimated that 22 geothermal plants will be installed in the locations indicated on the map in Vietnam with a total capacity of 472MW.

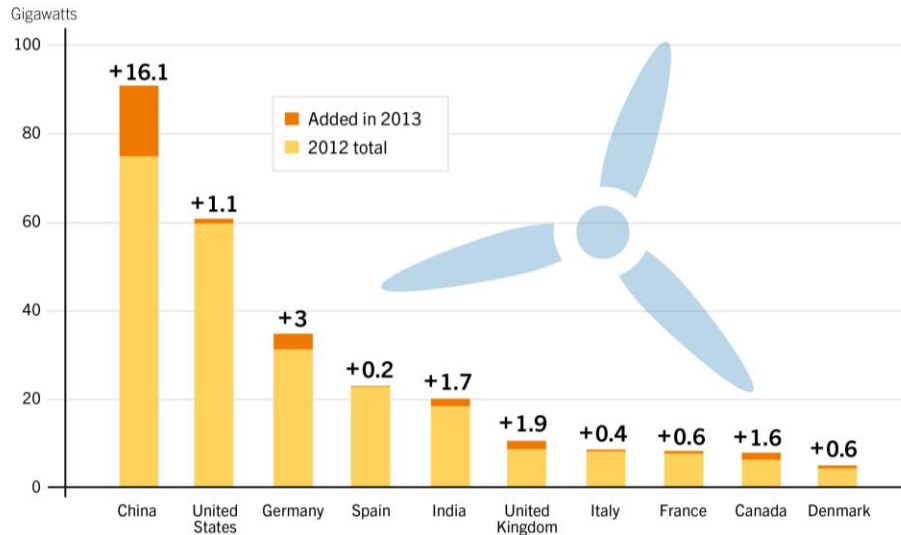
Considerations of resettlement and obtaining land mean that determining plant locations is inevitably sensitive. Detailed scoping and consultation is required to determine power plant sites, and without this level of investigation, it should be noted that the maps should be seen as a general guide to areas within which plants could be located.

Appropriate locations

Appropriate locations were assessed based upon resource potential in the area, suitable land use categories for large-scale installations, the likely location of electricity demand and access to the grid and transport networks

Cost trends and capacity at scale

Wind Power Capacity and Additions, Top 10 Countries, 2013



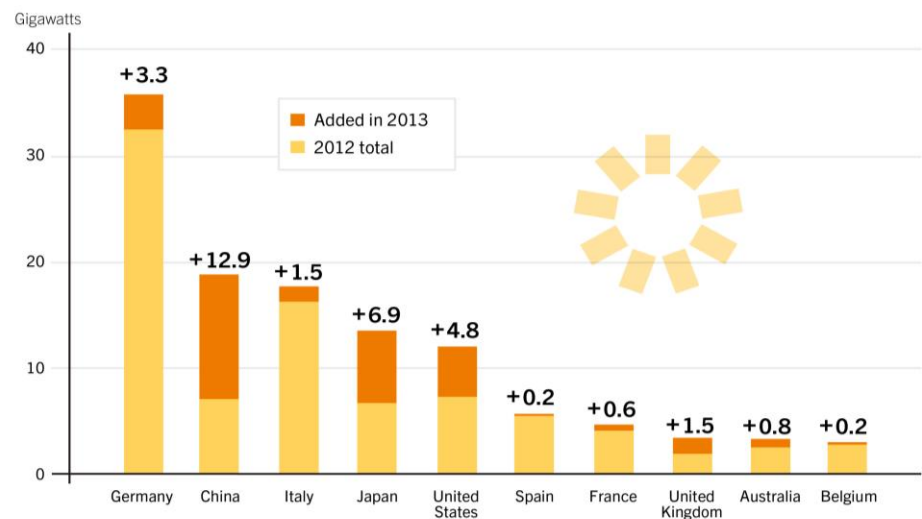
Additions are net of repowering.

REN21. 2014. *Renewables 2014 Global Status Report* (Paris: REN21 Secretariat).

Since 2008:

- **80% cost reduction in PV**
- **30% cost reduction in wind**

Solar PV Capacity and Additions, Top 10 Countries, 2013



REN21. 2014. *Renewables 2014 Global Status Report* (Paris: REN21 Secretariat).

Key trends and opportunities

- Urbanization and rural modernization
- Geographic proximity of resources
- Data access and tools for analysis
- Improved understanding of energy decisions on economic viability, sustainability, and security

USAID's concept of Sustainable Mekong Energy Initiative

To provide technical assistance in one or more of these three main areas:

- (1) Policy and planning for power systems;
- (2) Adoption of energy efficiency technologies and practices;
- (3) Increased renewable energy investment



USAID's Sustainable Mekong Energy Initiative

Objective: to direct investment in power development toward environmentally-friendly renewable energy and energy efficiency, leading to reduced or avoided greenhouse gas emissions and increased investment in clean energy

Implementation approach:

- During 2015, explore opportunities for partnerships and undertake consultations with key national agencies, development partners, and technical experts in the Lower Mekong
- In line with needs and desires of Lower Mekong countries, the SMEI could coordinate assistance from a variety of U.S. or regional ASEAN sources including private sector firms, utilities or energy agencies, professional associations, and regional institutions.

GOAL: Multi-Agency Effort



SMEI Design Plan Timeline

- Consultations by USAID and NREL with Lower Mekong countries, regional institutions, donors (February – June 2015)
- Clean Energy Experts' Roundtable (April 23-24, 2015)
- NREL organizational & technical analysis (March – August, 2015)
- Complete project documents (August – October, 2015)
- Procurement of technical assistance (November 2015 – April 2016)
- Start 5-year SMEI project implementation (April 2016)